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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,511	06/09/2005	Keun-Kyu Song	21C-0329	3156

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EXAMINER	
ULLAH, ELIAS	
ART UNIT	**PAPER NUMBER**
2892	

NOTIFICATION DATE	DELIVERY MODE
05/28/2009	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/538,511	SONG ET AL.	
	Examiner	Art Unit	
	ELIAS ULLAH	2892	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 February 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 11-18* is/are pending in the application.

4a) Of the above claim(s) *1-3* is/are withdrawn from consideration.

5)☒ Claim(s) *16-18* is/are allowed.

6)☒ Claim(s) *4-9 and 11-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 June 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/2/2009*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This office action is in response to an amendment filed on 2/18/2009.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 4-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraoka (Muraoka, US 6,699,330) in view of Boyers et al. (Boyers, US 6,982,006) all of record.

With regard to claim 4, Muraoka teaches a method of forming a pattern the method comprising: forming a photoresist pattern including novolak (col. 16, lines 37 - 40, see also for photoresist made novolak Col. 9, lines 1-5) on a layer (col. 16, line 35-40, wherein wafer has oxide film) formed on a substrate 56 in (Fig. 7) and removing the

photoresist pattern (col. 16, lines 50-55) using a stripping composition including an acetic acid and an ozone gas (col. 16, lines 44-50) included in the acetic acid in the form of a bubble (col. 16, lines 45-65).

Muraoka fails to teach a pH of the striping composition is about 1.6 to about 5.

However, Boyers teaches a pH of the striping composition is about 1.6 to about 5 (col. 21, lines 5-15, please note that ozone water solution can be include acetic acid see Col. 20, lines 65 and continued to col. 21 lines 1-3). At the time the invention was made; it would have been obvious to a person having ordinary skill in the art to use "a pH of the striping composition is about 1.6 to about" teaching of Boyers in the forming a pattern of Muraoka because a the pH can influence metal corrosion rates and etching rate and ph adjusting chemicals suitable for electronic devices taught by Boyers in (col. 21, lines 5-15).

With regard to claim 5, Muroka teaches the stripping composition (col. 16, lines 44-50) is prepared by bubbling (col. 16, lines 45-50) the ozone gas in the acetic acid.

With regard to claim 6, Muraoka does not disclosed specific concentration of the ozone gas included in the acetic acid is about 80,000 to about 90,000ppm.

However, Muraoka teaches a general concentration of ozone gas included in the acetic acid (col. 16, lines 44-50). Accordingly, it would have been obvious to one of ordinary skill in art to use teaching Muraok in the range as claimed, because it has been held that where the general conditions of the claims are discloses in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. MPEP 2144.05.

With regard to claim 7, Muraoka teaches the removing the photoresist pattern by spraying the stripping composition onto the photoresist pattern to wet the photoresist pattern and rinsing the photoresist pattern (col. 16, lines 50-60).

With regard to claim 8, Muraoka teaches the photoresist pattern is rinsed using water (col. 17, lines 1-5).

With regard to claim 9, Muraoka teaches moving the substrate in a first direction during spraying the stripping composition onto the photoresist pattern and moving the substrate in a second direction opposed to the during spraying the stripping composition onto photoresist pattern (col. 16, lines 45-65).

3. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraoka (Muraoka, US 6,699,330) in view of Boyers et al. (Boyers, US 6,982,006) and further view of Mei et al. (Mei, US 6,864,529) all of record.

With regard to claims 11 and 12, Muraoka the layer (col. 16, line 35-40) and the photoresist pattern (col. 16, lines 37-40) as a mask to form a pattern and removing the photoresist pattern using the stripping composition (col. 16, lines 50-55).

Muraoka fails to teach the layer comprises a gate layer having a first gate wiring layer and a second gate wiring layer and etching gate wiring layer and the etching the first gate wiring layer to form a first gate wiring layer pattern and the gate layer comprises a Cr layer and an Al layer.

However, Mei teaches the layer comprises a gate layer (Fig. 5, 310, 414A-414C) having a first gate wiring layer 315 and a second gate wiring layer 318 and etching gate wiring layer and the etching the first gate wiring layer to form a first gate wiring layer

pattern (Fig. 5) and the gate layer comprises a Cr layer and an Al layer (see floating layer 414 A- 414C, where in floating layer can be made of Cr and Al See Col. 4, lines 65-67). At the time the invention was made; it would have been obvious to a person having ordinary skill in the art to use "the layer comprises a gate layer having a first gate wiring layer and a second gate wiring layer and etching gate wiring layer and the etching the first gate wiring layer to form a first gate wiring layer pattern" teaching of Mei in the forming a pattern of Muraoka and Boyers because the layer including gate layer and having first gate wiring and second gate wiring easily included Muraoka and Boyers structure to make external connection for a semiconductor device.

4. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Muraoka (Muraoka, US 6,699,330) in view of Boyers et al. (Boyers, US 6,982,006), and in view of Mei et al. (Mei, US 6,864,529) and further view of Degendt et al. (Degendt, 2002/0088478).

With regard to claims 13-15, Muraoka teaches the photoresist pattern is removed using the stripping composition (col. 16, lines 50-55) and Mei teaches first and second gate wiring layers using an etching (Fig. 5), but Muraoka and Boyers and further view of Mei fail to teach etching gas comprises a chlorine gas a contact hole is formed according to etching the first and second gate wiring layers.

However, Degendt teaches chlorine gas included in the striping composition to remove photoresist film [0014, 0016 wherein organic contamination is also photoresist [0080]. At the time the invention was made; it would have been obvious to a person having ordinary skill in the art to use "a striping composition included a chlorine gas"

teaching of Degendt in the forming a pattern of Muraoka , Boyers and Mei because chlorine can act like an active agent in order to have an interaction of the gas phase and the liquid phase taking place on the surface of the semiconductor wafer as taught by Degendt in [0014].

Allowable Subject Matter

5. Claims 16-18 are allowed.

The following is an examiner's statement of reasons for allowance: with respect to claims 16-18, there is no prior art available or obvious motivation to combine elements of prior art which teach forming a semiconductor layer pattern and an ohmic contact pattern by etching the semiconductor layer and the doped amorphous silicon layer; forming a conductive material on the semiconductor layer pattern and on the ohmic contact pattern; forming a data line, a source electrode and a drain electrode by etching the conductive material; forming a passivation layer on the data line, the source electrode and the drain electrode; forming a second photoresist pattern including novolak on the passivation layer; etching the passivation layer to form a contact hole partially exposing the drain electrode; removing the second photoresist pattern using a stripping composition including an acetic acid and an ozone gas included in the acetic acid as a bubble form; and forming and etching transparent conductive material layer to form a pixel electrode.

Response to Arguments

6. Applicant's arguments filed on 2/18/2009 have been fully considered but they are not persuasive. With regard to claim 4, Applicants argue that " Muraoka in view of

Boyers fails to teach all limitations of the instant claims, and fails to provide a suggestion or incentive that would lead one skilled in the art to modify the combination to provide the claimed pH range of 1.6 to 5 as claimed in Claim 4". However, Boyers clearly teaches pH rate of 4.2 for normalize the etch rate (see Col. 21, lines 10+) and the pH rate of 4.2 is in the range of Applicants claimed range of 1.6 to 5.

Applicants also argue that "One skilled in the art will appreciate that a higher etch rate is generally more desirable than a lower etch rate, as a higher etch rate implies reduction in processing time, greater throughput, and increased manufacturing efficiency. In accord with this, Boyer teaches a pH of 6.7, which is roughly comparable to pH of 7 and would be expected to provide an increased etch rate. However, the pH of the invention as claimed is from 1.6 to 5, which is not taught by Muraoka or Boyers". However, it is not necessary in order to establish a prima facie case of obviousness because a suggestion or expectation from the prior art that the claimed invention will have the same or a similar utility as one newly discovered by the applicant. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See, e.g., *In re Kahn*, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006); *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1323, 76 USPQ2d 1662, 1685 (Fed. Cir. 2005); *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 U.S. 904 (1991). See MPEP § 2144 (IV).

Applicants further argue that “In an exemplary embodiment, the acetic acid used in the stripping composition of the instant invention has a pH of 2. See Specification, p. 14, lines 5-6. It is disclosed in the instant Specification that photoresist may be lifted off by the ozone under a strong acidic atmosphere, and the photoresist is transformed to a carboxylic acid by the ozone so that oxidation-reduction potential is no less than about 1V while the pH is no more than about 5. Muraoka is silent as to these teachings and cannot therefore provide a suggestion or incentive that would lead one skilled in the art to modify Muraoka to provide these limitations". However, Applicants apparently argue the subject matter that are recited in the specification but not recited in the claim i.e. 4 should not be read into the claim. E-Pass Techs., Inc. v. 3Com Corp., 343 F.3d1364, 1369, 67 USPQ2d 1947, 1950 (Fed. Cir. 2003) (claims must be interpreted “in view of the specification” without importing limitations from the specification into the claims unnecessarily). In re Prater, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969). See also In re Zletz, 893 F.2d 319, 321-22, 13 USPQ2d 1320,1322 (Fed. Cir. 1989). See MPEP 2111.04.

Applicants further argue that “neither Muraoka nor Boyer disclose the use of ozone in bubble form in the stripping composition". However, Muraoka clearly teaches “ ozone in bubble form" see col. 16, lines 45+).

Applicants further argue that “the ranges of the cited art and the of the instant claim differ by two orders of magnitude, well above any arguable margin of optimization and clearly indicative to a vastly different process”. However, Applicants claimed i.e. claim 6 a concentration of the ozone (not the range e.g. relate to thickness) thus as

MPEP clearly states that differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235(CCPA 1955).

With regard to claims 11-15, Applicants further argue that Mei discloses a memory devices and Degendt discloses inclusion of chlorine in a stripping process thus the combination of those references fail to render the instant claims unpatentable. it is not necessary in order to establish a prima facie case of obviousness because a suggestion or expectation from the prior art that the claimed invention will have the same or a similar utility as one newly discovered by the applicant. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. See, e.g., *In re Kahn*, 441 F.3d 977, 987, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006); *Cross Med. Prods., Inc. v. Medtronic Sofamor Danek, Inc.*, 424 F.3d 1293, 1323, 76 USPQ2d 1662, 1685 (Fed. Cir. 2005); *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), *cert. denied*, 500 U.S. 904 (1991). See MPEP § 2144 (IV).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ELIAS ULLAH whose telephone number is (571)272-1415. The examiner can normally be reached on weekdays, between 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thao Le can be reached on (571) 272-1708. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Elias Ullah/
Examiner, Art Unit 2892

/Hoai v Pham/
Primary Examiner, Art Unit 2892